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OHKAY OWINGEH

Surface Water Quality Standards

Adopted September 28, 1992

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OHKAY OWINGEH SURFACE WATER QUALITY STANDARDS

TABLE OF CONTENTS

Cover		1
TOC	Table of Contents	2
SECTION I.	Introduction, Authority, and Applicability	3
SECTION II.	Antidegradation Policy and Implementation Plan	7
SECTION III.	General Standards	10
SECTION IV.	Water Body Uses & Standards Specific to Use	19
SECTION V.	Uses & Standards for Designated Water Bodies	23
SECTION VI.	Sampling and Analyses	27
SECTION VII.	Definitions	28
APPENDIX A.	Ammonia Standards for Fisheries Protection	34
APPENDIX B.	Organoleptic Criteria	35

SECTION I.

Introduction, Authority, and Applicability

Pursuant to Section 518¹ of the Clean Water Act², the Tribal Council of the OHKAY OWINGEH (SAN JUAN PUEBLO), a federally-recognized Tribe of Indians, hereby enacts the OHKAY OWINGEH Surface Water Quality Standards.

- A. The purposes of the Ohkay Owingeh Surface Water Quality Standards are as follows:
1. to identify the existing and attainable uses that are being designated for which the surface waters of the OHKAY OWINGEH shall be protected;
 2. to prescribe criteria (narrative and numeric) which shall be imposed in order to fully protect the designated uses;
 3. to assure that degradation of existing surface water quality does not occur; and
 4. to promote the social welfare and economic well-being of OHKAY OWINGEH.

These purposes shall be accomplished by incorporating the standards set forth in the OHKAY OWINGEH Surface Water Quality Standards into the permitting and management process for point source dischargers and non-point source generators, by using those standards to determine when a designated use is threatened or impaired, and by requiring the most efficient treatment technologies to control point sources and requiring implementation of effectual best management practices for non-point sources of pollution.

¹ 33 U.S.C. Section 1377 (enacted February 4, 1987).

² 33 U.S.C. Section 1251 et seq. (1948, as amended).

B. The OHKAY OWINGEH Surface Water Quality Standards apply to all tribal waters, that is, all surface waters within the exterior boundaries of the OHKAY OWINGEH Indian Reservation, including waters of the United States situated wholly or partly within, or boarding upon, the Reservation, whether public or private.

C The OHKAY OWINGEH Surface Water Quality Standards are consistent with Section 101 (a) (2) of the Clean Water Act (33 U.S.C. Section 1251(a) (2), which declares that "it is the national goal that, wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983"

Primary contact ceremonial use, agricultural water supply use, fish culture use, and industrial water supply use are other beneficial uses of OHKAY OWINGEH Tribal surface waters. The OHKAY OWINGEH Surface Water Quality Standards provide that contamination that may result from such uses shall not lower the quality of the water below what is required for recreation and protection and propagation of fish, shellfish, and wildlife.

D. OHKAY OWINGEH Office of Environmental Affairs shall seek work in cooperation with the U.S. Environmental Protection Agency and other agencies of the federal government or of the State of New Mexico to insure attainment of the Ohkay Owingeh Surface Water Quality Standards.

E. The Antidegradation policy for Tribal waters and the procedures for implementing it are set forth in Section II herein and in the Implementation Plan referred to therein.

F. Pursuant to Section 303(c)(1) of the Clean Water Act (33 U.S.C. Section 1313(c)), Ohkay Owingeh shall hold public hearings at least once each three-year period for the purpose of reviewing and, as appropriate, amending the Ohkay Owingeh Surface Water Quality Standards. Revisions shall incorporate relevant scientific and engineering advances.

G. Ohkay Owingeh shall issue and approve surface water designations for tribal waters and shall determine the suitability of bodies of water for recreational purposes.

H. Criteria specific to a designated use shall be protected through implementation of the appropriate critical design flow. Where water diversion or drought result in flow rates of zero, all discharges shall meet the criteria for the most sensitive designated use for the receiving water body. For standing water bodies, criteria particular to a use shall be maintained whenever the water body is suitable for the use. The Narrative Standards (Section III, below) shall be

maintained at all times and shall apply to rivers, streams, lakes, reservoirs, canals, drains, ponds, springs, and wetlands, whether perennial, ephemeral, or intermittent in nature. The design flow standards are based on the harmonic mean (carcinogens) and 30Q5 (non carcinogens) for implementation of human health criteria and 4Q3 flow for numeric criteria under other uses. This shall be the most stringent criteria to protect the most sensitive use designated for that body of water. Artificial Reservoirs constructed outside waters of the United States used for water treatment are exempt from these standards, provided, however, that the water released from any such reservoir must meet all the criteria that apply to the receiving body of water.

I. These surface water quality standards shall be the basis for managing discharges attributable to point and non-point sources of pollution. These surface water quality standards are not used to control natural background phenomena or acts of God.

J. In the event that monitoring of water quality identifies reaches where attainable water quality is less than what is required by the Ohkay Owingeh Surface Water Quality Standards due to natural background conditions, then Ohkay Owingeh may modify the Surface Water Quality Standards to reflect actual attainability. Modification thereof shall be within the sole discretion of Ohkay Owingeh, but shall be subject to the provisions of the Clean Water Act, and shall be carried out in accordance with use-attainability analysis procedures as defined in the Code of Federal Regulations at Title 40 Section 131.10 (g), or other appropriate methods.

K. Errors resulting from inadequate and erroneous data or human or clerical oversight will be subject to correction by Ohkay Owingeh. The discovery of such errors does not render the remaining and unaffected standards invalid. If any provision of the Ohkay Owingeh Surface Water Quality Standards, or the application of any provision of these Water Quality Standards to any person or circumstance, should be held to be invalid, the application of such provision to other persons and circumstances and the remainder of the Surface Water Quality Standards shall not be affected thereby.

L. Compliance Schedules. It shall be the policy of the Ohkay Owingeh to allow on a case-by case basis the inclusion of a compliance schedule in a National Pollutant Discharge Elimination System ("NPDES") permit issued to an existing facility. Such a schedule of compliance will be for the purpose of providing a permittee with adequate time to make treatment facility modifications necessary to comply with water-quality based permit limitations determined to be necessary to achieve stream standards. Compliance schedules may be included in NPDES permits at the time of permit re-issuance or modification and shall require compliance at the earliest practicable time, as soon as possible. Compliance schedules also shall specify milestone dates so as to measure progress towards completion.

M. Variances. The Tribal Council may allow variances from these standards herein on a case-by-case basis. A variance from the Pueblo's criteria may be allowed in certain cases where the appropriateness of the specific criteria is questionable. The variance provides a period of time during which issues concerning the appropriateness of the criteria may be resolved. A variance shall be valid for no more than three (3) years. The procedure shall include public participation and review by EPA. Participation will be encouraged by the issuance of a public notice that a variance is being proposed and that a comment period of no more than (45) forty-five days has commenced.

SECTION II. Antidegradation Policy and Implementation Plan

A. Antidegradation Policy:

1. Existing uses shall be protected. The level of water quality necessary to protect existing uses shall be maintained.

2. Where existing water quality exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water, that level of water quality shall nonetheless be maintained and protected unless it is found, after full satisfaction of governmental and public participation requirements, that a lower level of water quality is required in order to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation of surface water quality, Ohkay Owingeh shall assure water quality adequate to fully protect existing uses while imposing the highest statutory and regulatory requirements for point sources and implementation of effectual best management practices for non-point sources.

3. Where high quality waters constitute an outstanding national or tribal resource or waters of exceptional recreational or ecological significance, the surface water quality and uses of those water bodies shall be maintained and protected.

4. In those cases where potential water quality impairments associated with thermal discharge are involved, the antidegradation policy and implementation method shall be consistent with Section 316 of the Clean Water Act, as amended, (33 U.S.C. Section 1326 (1987)).

B. Implementation Plan.

Acting under authority delegated by the Ohkay Owingeh Tribal Council, the Ohkay Owingeh Office of Environmental Affairs shall implement the Ohkay Owingeh Surface Water Quality Standards, including the antidegradation policy, by establishing and maintaining controls on the introduction of pollutants into surface waters. More particularly, the Office of Environmental Affairs shall do the following:

1. Monitor water quality to assess the effectiveness of pollution controls and to determine whether surface water quality standards are being attained, this can include biological monitoring;
2. obtain information as to the impact of effluents on receiving waters;
3. advise prospective dischargers of discharge requirements;
4. review the adequacy of the existing data base and obtain additional data when required;

5. perform ongoing reviews of federal surface water quality requirements and; as necessary, proposes amendments to these standards;
6. require the highest and best degree of wastewater treatment practicable and commensurate with protecting and maintaining designated uses and existing water quality;
7. develop water quality based effluent limitations and comments on technology-based effluent limitations, as appropriate, for inclusion in any federal permit issued to a discharger pursuant to Section 402 of the Clean Water Act (33 U.S.C. Section 1342);
8. require that these effluent limitations be included in any such permit as a condition for Tribal certification pursuant to Section 401 of the Clean Water Act, (33 .U.S.C. Section 1341);
9. seek to coordinate water pollution control activities with other tribal agencies and other local, state, and federal agencies, as appropriate;
10. develop and pursue inspection and enforcement programs in order to ensure that dischargers comply with requirements of the Ohaky Owingeh Surface Water Quality Standards and any requirements promulgated thereunder, and in order to support the enforcement of federal permits by the U.S. Environmental Protection Agency and/or the U.S. Army Corps of Engineers;
11. provide continuing technical training for wastewater treatment facility operators through training and certification programs;
12. publish the results of water quality investigations and the interpretation thereof;
13. encourage, in conjunction with other agencies, implementation of effectual best management practices to control nonpoint sources of pollutants to achieve compliance with Ohkay Owingeh Surface Water Quality Standards; Evaluates the need for, and effectiveness of, best management practices;
14. subject to the approval of the Tribal Council, shall designate streams as perennial, intermittent, or ephemeral in accordance with these standards and determine low flow numeric values; and
15. Provide such other technical support as required to accomplish the

objectives of these standards, including recommendations to the Tribal Council of any permitting or management regulations which would be consistent with the purposes of these standards.

SECTION III. General Standards

The following General Standards apply to all surface waters of Ohkay Owingeh, including intermittent and ephemeral streams, provided, however, that where Sections IV and V, below, set stricter criteria for designated water bodies, the stricter criteria supersede the General Standards.

A. Stream Bottom Deposits: Surface waters shall be free from water contaminants from other than natural causes that may settle and have a deleterious effect on the aquatic biota or that will adversely alter the physical or chemical properties of the water or the bottom sediments.

B. Floating Solids, Oil, and Grease: Surface waters shall be free from objectionable oils, scum, foam, grease, and other floating materials and suspended substances of a persistent nature resulting from other than natural causes (including visible films of oil, globules of oil, grease, or solids in or on the water, or coatings on stream banks). As a guideline, oil and grease discharged into surface waters shall not exceed 10 mg/liter average or 15 mg/liter instantaneous maximum.

C. Color: Surface waters shall be free from true color-producing materials from other than natural causes that create an aesthetically undesirable condition. Color shall not impair the designated and other attainable uses of a water body. Color-producing substances from other than natural sources are limited to concentrations equivalent to 70 color units (CU).

D. Odor and Taste: Contaminants from other than natural causes are limited to concentrations that do not impart unpalatable flavor to fish, and that do not result in offensive odor arising from the water, and that do not otherwise interfere with the designated and other attainable uses of a water body. Taste and odor-producing substances from other than natural origins shall not interfere with the production of a potable water supply by modern treatment methods. The criteria adopted to prevent organoleptic effects are found in Appendix B.

E. Nuisance Conditions: Plant nutrients or other substances stimulating algal growth, or growth of excessive rooted aquatic vegetation from other than natural causes shall not be present in concentrations that produce objectionable algal densities or nuisance aquatic vegetation, or that result in a dominance of nuisance species instream, or that cause nuisance conditions in any other fashion. Plant nutrient concentrations shall not be permitted to reach levels which result in man-induced eutrophication problems. If nuisance conditions resulting from plant nutrients are identified in the surface waters of Ohkay Owingeh, limitations for such nutrients may be established by Ohkay Owingeh in accordance with the U.S. Environmental Protection Agency's *"Ambient Water Quality Recommendations. Information Supporting the Development of State and*

Tribal Nutrient Criteria. Rivers and Streams in Nutrient Ecoregion III. (EPA 822-B-00-016, December 2000) and incorporated into these Surface Water Quality Standards.

F. Pathogens: Surface waters shall be virtually free from pathogens. Waters used for irrigation of table crops (e.g., lettuce) shall be virtually free of Salmonella and Shigella species, and pathogens, which includes bacteria, viruses and parasites.

G. Turbidity: Turbidity attributable to other than natural causes shall not reduce light transmission to a point where aquatic biota are inhibited or alter color or visibility to a point that causes an unaesthetic and substantial visible contrast with the natural appearance of the water. Specifically, turbidity shall not exceed 5 NTU over background when background turbidity is 50 NTU or less, with no more than a 10 percent increase when background turbidity is more than 50 NTU.

H. Mixing Zones: Where effluent is discharged into surface waters, a continuous zone shall be maintained in which the water is of adequate quality to allow the migration of aquatic life with no significant effect on their population. The cross-sectional area of wastewater mixing zones shall generally be less than 1/4 of the cross-sectional area or flow volume of the receiving stream. In intermittent or ephemeral streams, discharges shall meet all applicable numeric and narrative criteria at the point of discharge. There shall be no acute toxicity in the mixing zone. Numeric acute criteria shall be attained at the point of discharge. There shall be no chronic toxicity at the edge of the mixing zone. Mixing zones in lakes may be assessed and limited on a case-by-case basis. (See Section IV, below.) Mixing Zones shall not overlap sites of primary contact. Requirements for mixing zones shall be consistent with those established in the water quality management plans and implementation plans developed by the Pueblo or regulations issued by the EPA. Water quality standards shall be maintained throughout zones of passage. Zones of passage in lakes and intermittent streams may be designated on a site specific basis. The water quality in a zone of passage shall not be permitted to fall below the standards for the designated water body (ies) within which the zone is contained. With regard to toxicity in mixing zones, see Subsection III (N), below.

I. Radioactive Materials: Concentrations of gross alpha and gross beta particle activity shall not exceed the concentration caused by erosion of naturally-occurring geologic materials. The combined dissolved concentration of Radium-226 and Radium-228, shall not exceed 5 picocuries per liter. Gross alpha particle concentrations, including Radium-226 but excluding radon and uranium, shall not exceed 15 picocuries per liter. The average annual concentration of beta particles and of photon radioactivity in surface waters shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year. Tritium concentrations shall not exceed 20,000 picocuries per liter and Strontium

90 concentrations shall not exceed 8 picocuries per liter.

J. Temperature: The introduction of heat by other than natural causes shall not increase the temperature in a stream, by more than 2.7 °C (5°F), based upon the weekly average of the maximum daily temperatures measured at mid-depth or three feet (whichever is less) outside a mixing zone. In lakes, the temperature of the water column or epilimnion (if thermal stratification exists) shall not be raised more than 1.7° C (3° F) above that which existed before the addition of heat of artificial origin, based upon the average of temperatures taken from the surface to the bottom or surface to the bottom of the epilimnion (if stratified). The normal daily and seasonal variations that were present before the addition of heat from other than natural sources shall be maintained. In no case shall man-introduced heat be permitted when the maximum temperature specified for the reach (20° C/68° F for coldwater fisheries and 32.2° C/ 90° F for warmwater fisheries) would thereby be exceeded. Privately-owned lakes and reservoirs used in the process of cooling water for industrial purposes may be classified using a less stringent special-use standard for thermal components, provided, however, that the water released from any such lake or reservoir into a stream system or into Tribal Lakes meets the surface water quality standards of the receiving stream. High water temperatures caused by unusually high ambient air temperatures are not violations of these standards.

K. Salinity/Mineral Quality (total dissolved solids, chlorides, and sulfates): Existing mineral quality shall not be altered by municipal, industrial, and instream activities, or other waste discharges so as to interfere with the designated or attainable uses for a water body. An increase of more than 1/3 over naturally-occurring levels shall not be permitted. Numeric criteria for chlorides at 230 mg/L, for sulfates at 250 mg/L, and for total dissolved solids at 500 mg/L shall not be exceeded.

L. The pH of a stream or lake shall not be permitted to fluctuate in excess of 1.0 pH unit over a period of 24 hours for other than natural causes.

M. If a stream or lake is capable of supporting aquatic life, the dissolved oxygen standard will be a minimum of 5 mg/L.

N. Toxic Substances:

1. Toxic substances shall not be present in receiving waters in quantities that are toxic to human, animal, plant, or aquatic life, or in quantities that interfere with the normal propagation, growth, and survival of the sensitive indigenous aquatic biota. There shall be no acute toxicity within the mixing zone. There shall be no chronic toxicity at the edge of the mixing zone.

2. For toxic substances lacking EPA published criteria,

biomonitoring data may be used to determine compliance with this narrative standard in accordance with EPA standard acute and chronic biological test protocols. These protocols can be found in Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms; EPA 821-R-02-012(October 2002), Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA 821-R02-013 (October 2002) or the most current revision thereof; Post Third round NPDES Permit Implementation Strategy: adopted October 1, 1992, or the most current revision thereof; U.S. Environmental Protection Agency, "Technical Support Document for Water Quality-Based Toxics Control"; EPA/505/2-90-001; March 1991 or the most recent revision thereof. Should Ohkay Owingeh need to derive numeric criteria, without actually conducting toxicity tests, it shall use the AQUIRE (Aquatic Toxicity Information Retrieval) database and EPA guidance. Guidelines for deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and their uses, to calculate any criteria. In the event that sufficient data is not available to derive a numeric criterion following the above guidance, the Pueblo may use the results of toxicological studies to calculate a criterion based on the following methods;

a. concentrations on non-persistent toxic materials shall not exceed concentrations which are chronically toxic (as determined from appropriate chronic toxicity data or calculated as 10% of LC50 values) to representative, sensitive, aquatic organisms;

b. concentrations of persistent toxic materials that do not bioaccumulate shall not exceed concentrations which are chronically toxic (as determined from appropriate chronic toxicity data or calculated as 5% of LC50 values) to representative, sensitive, aquatic organisms; and

c. concentrations of toxic materials that bioaccumulate shall not exceed concentrations which are chronically toxic (as determined from appropriate chronic toxicity data or calculated as 1% of LC50 values) to representative, sensitive, aquatic organisms.

Toxicants in the receiving water known to be persistent, bioaccumulative, carcinogenic, and/or synergistic with other waste stream components may be addressed on a case by case basis.

3. For the toxic substances listed the following numeric criteria shall apply:

FRESH WATER
AQUATIC LIFE CRITERIA

HUMAN HEALTH
CRITERIA *

(based on fish consumption only)

CAS #	Substance	Chronic Toxicity		Acute Toxicity	
		ug/l ^c	ug/l ^c	ug/l ^c	(units/liter not to exceed)
83-32-9	Acenaphthene	--	--	--	990 µg
107-02-8	Acrolein	--	--	--	290 µg
107-13-1	Acrylonitrile ^(c)	--	--	--	0.25 µg
309-00-2	Aldrin ^(c)	--	3.0	--	0.05 ng
7440-36-0	Antimony	--	--	--	640 µg
7440-38-2	Arsenic ^(c)	--	--	--	20.5 µg
	Arsenic (tri) ^{a(c)}	150	340	--	--
71-43-2	Benzene ^(c)	--	--	--	51 µg
92-87-5	Benzidine ^(c)	--	--	--	0.2 ng
75-25-2	Bromoform ^(c)	--	--	--	140 µg
7440-43-9	Cadmium ^{a d}	$e^{(0.7409[\ln(\text{HD})]-4.719)}$	$e^{(1.0166[\ln(\text{HD})]-3.924)}$	--	--
56-23-5	Carbon Tetrachloride ^(c)	--	--	--	1.6 µg
57-74-9	Chlordane ^(c)	0.0043	2.4	--	0.00081 µg
91-58-7	Chlorinated Naphthalene 2	--	--	--	1600 µg
7782-50-5	Chlorine total residual	3	19	--	--
111-44-4	Chloroethyl Ether (BIS-2) ^(c)	--	--	--	0.53 µg
67-66-3	Chloroform ^(c)	--	--	--	470 µg
108-60-1	Chloroisopropyl Ether (BIS-2) -	--	--	--	65 mg
542-88-1	Chloromethyl Ether (BIS) ^(c)	--	--	--	0.00029 µg
95-57-8	Chlorophenol 2	--	--	--	150 µg
2921-88-2	Chlorpyrifos	0.041	0.083	--	--
16065-83-1	Chromium (tri) ^a	$e^{(0.8190[\ln(\text{hd})]+0.534)}$	$e^{(0.8190[\ln(\text{hd})]+2.5736)}$	--	3.433 mg
18540-29-9	Chromium (hex) ^a	10.58	15.71	--	--
124-48-1	Chlorodibromomethane ^(c)	--	--	--	13 µg
7440-50-8	Copper ^a	$e^{(0.8545[\ln(\text{hd})]-1.7428)}$	$e^{(0.9422[\ln(\text{hd})]-1.7408)}$	--	--
57-12-5	Cyanide (total)	5.2	22	--	--
50-29-3	DDT ^(c)	0.001	1.1	--	0.22 ng
72-55-9	DDT Metabolite (DDE) ^(c)	--	--	--	0.22 ng
8065-48-3	Demeton	0.1	--	--	--
333-41-5	Diazinon	0.17	0.17	--	--
84-74-2	Dibutylphthalate	--	--	--	4.5 mg
106-46-7	Dichlorobenzene 1,4	--	--	--	2.6 mg
91-94-1	Dichlorobenzidine 3,3 ^(c)	--	--	--	0.028 µg
75-27-4	Dichlorobromomethane ^(c)	--	--	--	17 µg

* The values stated as Human Health Criteria for these substances are based on the assumption that fish from these the surface waters covered by the Ohkay Owingeh Surface Water Quality Standards are consumed but water from these surface waters is not regularly ingested. A risk of 10^{-6} is assumed for carcinogens.

FRESH WATER
AQUATIC LIFE CRITERIA

HUMAN HEALTH
CRITERIA *

(based on fish consumption only)

CAS #	Substance	Chronic Toxicity	Acute Toxicity	(units/liter
		$\mu\text{g/l}^c$	$\mu\text{g/l}^c$	not to exceed)
107-06-2	Dichloroethane 1,2 ^(c)	--	--	37 μg
75-35-4	Dichloroethylene 1,1	--	--	3.2 μg
156-60-5	Dichloroethylene 1,2 trans	--	--	140 mg
120-83-2	Dichlorophenol 2,4	--	--	290 μg
78-87-5	Dichloropropane 1,2	--	--	15 μg x
542-75-6	Dichloropropene 1,3 (cis and trans isomers)	--	--	1700 μg
60-57-1	Dieldrin ^(c)	0.056	0.24	0.000054 μg
84-66-2	Diethyl phthalate	--	--	44 mg
105-67-9	Dimethyl Phenol 2,4	--	--	850 μg
131-11-3	Dimethylphalate	--	--	1.1 g
121-14-2	Dinitrotoluene 2,4 ^(c)	--	--	3.4 μg
51-28-5	Dinitro Phenols 2,4	--	--	5.3 mg
534-52-1	Dinitro-O-Cresol 2,4	--	--	280 μg
1746-01-6	Dioxin (2,3,7,8-TCDD) ^(c)	--	--	0.0000051 ng
122-66-7	Diphenylhydrazine 1,2 ^(c)	--	--	0.2 μg
117-81-7	Di-2-Ethylhexylphthalate ^(c)	--	--	2.2 μg
115-29-7	Endosulfan	0.056	0.22	89 μg
72-20-8	Endrin	0.036	0.086	0.81 μg
100-41-4	Ethylbenzene	--	--	29000 μg
206-44-0	Fluoranthene	--	--	140 μg
86-50-0	Guthion	0.01	--	--
76-44-8	Heptachlor ^(c)	0.0038	0.52	0.079 ng
67-72-1	Hexachloroethane ^(c)	--	--	3.3 μg
118-74-1	Hexachlorobenzene ^(c)	--	--	0.29 ng
87-68-3	Hexachlorobutadiene ^(c)	--	--	18 μg
58-89-9	Hexachlorocyclohexane ^(c) (Lindane)	0.080	0.95	63 ng
319-84-6	Hexachlorocyclohexane- ^(c) Alpha	--	--	4.9ng
319-85-7	Hexachlorocyclohexane-Beta ^(c)	--	--	17 ng
77-47-4	Hexachlorocyclopentadiene	--	--	17mg
7439-89-6	Iron	1000	--	--
78-59-1	Isophorone ^(c)	--	--	960 μg

* The values stated as Human Health Criteria for these substances are based on the assumption that fish from these the surface waters covered by the Ohkay Owingeh Surface Water Quality Standards are consumed but water from these surface waters is not regularly ingested. A risk of 10^{-6} is assumed for carcinogens.

FRESH WATER
AQUATIC LIFE CRITERIA

HUMAN HEALTH
CRITERIA *

CAS #	Substance	Chronic Toxicity	Acute Toxicity	(units/liter)
		ug/l ^c	ug/l ^c	not to exceed
7439-92-1	Lead ^{a d}	$e^{(1.273[\ln(\text{HD})]-4.705)}$	$e^{(1.273[\ln(\text{HD})]-1.460)}$	50 μg
121-75-5	Malathion	0.1	--	--
7439-96-5	Manganese	--	--	100 μg
7439-97-6	Mercury total	0.77	1.4	0.051 μg
22967-92-6	Methylmercury	--	--	0.3mg/kg ^e
72-43-5	Methoxychlor	0.03	--	--
74-83-9	Methyl bromide	--	--	1500 μg
75-09-2	Methylene chloride ^(c)	--	--	590 μg
2385-85-5	Mirex	0.001	--	--
7440-02-0	Nickel ^a	$e^{(0.8460[\ln(\text{HD})]+0.0554)}$	$e^{(0.8460[\ln(\text{HD})]+2.253)}$	4600 μg
98-95-3	Nitrobenzene	--	--	690 μg
924-16-3	Nitrosodibutylamine N ^(c)	--	--	220 ng
55-18-5	Nitrosodiethylamine N ^(c)	--	--	1240 ng
62-75-9	Nitrosodimethylamine N ^(c)	--	--	3.0 μg
86-30-6	Nitrosodiphenylamine N ^(c)	--	--	6.0 μg
930-55-2	Nitrosopyrrolidine N ^(c)	--	--	34 μg
56-38-2	Parathion	0.013	0.065	--
1336-36-3	Polychlorinated Biphenyl's	0.014	2.0	0.064 ng
608-93-5	Pentachlorobenzene	--	--	1.5 μg
87-86-5	Pentachlorophenol ^(c)	$e^{(1.005(\text{pH})-5.134)}$	$e^{(1.005(\text{pH})-4.869)}$	3.0 μg
108-95-2	Phenol	--	--	1.7 g
	Polynuclear Aromatic Hydrocarbons	--	--	18 ng
7782-49-2	Selenium ^b	2.0	20.0	--
7440-22-4	Silver ^b	--	$e^{1.72(\ln \text{hardness})-6.7525}$	--
7783-06-4	Sulfide-Hydrogen Sulfide	2	--	--
95-94-3	Tetrachlorobenzene 1,2,4,5	--	--	1.1 μg
79-34-5	Tetrachloroethane 1,1,2,2	--	--	4.0 μg
127-18-4	Tetrachloroethylene ^(c)	--	--	3.3 μg
7440-28-0	Thallium	--	--	6.3 μg
108-88-3	Toluene	--	--	200mg
8001-35-2	Toxaphene ^(c)	0.0002	0.73	0.28 ng
79-00-5	Trichloroethane 1,1,2	--	--	16 μg
79-01-6	Trichloroethylene ^(c)	--	--	30 μg

* The values stated as Human Health Criteria for these substances are based on the assumption that fish from these the surface waters covered by the Ohkay Owingeh Surface Water Quality Standards are consumed but water from these surface waters is not regularly ingested. A risk of 10^{-6} is assumed for carcinogens.

CAS #	Substance	FRESH WATER AQUATIC LIFE CRITERIA		HUMAN HEALTH CRITERIA (based on fish consumption only)	
		Chronic Toxicity ug/l ^c	Acute Toxicity ug/l ^c	Acute Toxicity ug/l ^c	(units/liter not to exceed)
88-06-2	Trichlorophenol 2,4,6	--	--	--	2.4 μg
75-01-4	Vinyl Chloride ^(c)	--	--	--	530 μg
7440-66-6	Zinc ^a	$e^{(0.8473[1n(HD)]+0.8699)}$	$e^{(0.8473[1n(HD)]+0.8618)}$	--	--

HD = hardness
 g = grams
 mg = milligrams
 μg = micrograms
 ng = nanograms
 μg/l = micrograms/liter

a value based on using a dissolved method
 b total recoverable
 c Chronic and acute toxicity averaging periods and exceedences are as specified by the US Environmental Protection Agency in "Quality Criteria for Water, 1986."

d Criteria for cadmium and lead should be multiplied by conversions factors
 Cadmium: Chronic conversion factor= $1.101672-(1n\{hardness\})(0.041838)$

Acute conversion factor = $1.136672 - [ln\{hardness\})(0.041838)$

Lead: Acute and chronic conversion factor= $1.46203-(ln\{hardness\})(0.145712)$

e Methylmercury – this fish tissue residue criterion for methylmercury is based on a total fish consumption rate of 0.0175kg/day.

(c) Carcinogens: chemicals classified by EPA as carcinogens for an oral route of exposure: includes A, B1, B2 and C carcinogens.

x For copper and 1,2-dichloropropane, there is no RFD listed in IRIS, but human health criteria guidance was included in the National Toxics Rule. The "updated values" listed for these two pollutants are found in the National Toxics Rule 57 FR 60890, DEC 22, 1992.

As new criteria documents for toxic substances are published by EPA, these will become incorporated into and made a part of this Subsection N, TOXIC SUBSTANCES, during triennial review, and the numeric criteria established by EPA shall equally apply. Numeric criteria for carcinogens will reflect a risk level of one in a million.

For specific segments where the above criteria may need to be recalculated using

appropriate species or water quality factors, Ohkay Owingeh may, after public participation and EPA approval, adopt site-specific criterion modifications. Since pesticides and PCB's can accumulate in bottom sediments and tissues of aquatic organisms, sediment and tissue analyses shall routinely be used to complement water analyses. Fish tissue levels in excess of FDA Action Limits shall require investigation.

SECTION IV. Water Body Uses and Standards Specific to the Uses

A. Marginal Coldwater Fishery Use. A marginal coldwater fishery is a stream or river reach, lake, or impoundment where water temperature and other characteristics are suitable for support of coldwater fish (such as brown trout, cutthroat trout, brook trout, rainbow trout, longnose dace, Rio Grande chub or Rio Grande Sucker), but where temperature and other characteristics may not always be suitable for propagation of coldwater fish.

Standards specific to the use are as follows:

1. **Dissolved oxygen** minimum: 6 mg/l
2. **Temperature** maximum: 25°C (77°F).
3. **pH** range: 6.6-9.0
4. **Total ammonia** standards shall not exceed at any time the Environmental Protection Agency's national recommended Criterion Maximum Concentration or, exceed more than once in any three-year period, the Criterion Continuous Concentration as contained in Appendix A.
5. **Total residual chlorine** maximum: 0.003 mg/l

B. Coldwater Fishery Use. A coldwater fishery is a stream or river reach, lake, or impoundment where water temperature and other characteristics are suitable for support and propagation of coldwater fish such as brown trout, cutthroat trout, brook trout, or rainbow trout, Longnose dace, Rio Grande chub or Rio Grande Sucker (See Section VII, "Definitions," below.)

Standards specific to the use are as follows:

1. **Dissolved oxygen** minimum: 6 mg/l
2. **Temperature** maximum: 20° C (68° F)
3. **pH** range: 6.6-8.8
4. **Total ammonia** standards shall not exceed at any time the Environmental Protection Agency's national recommended Criterion Maximum Concentration or, exceed more than once in any three-year period, the Criterion Continuous Concentration as contained in Appendix A.
5. **Total residual chlorine** maximum: 0.003 mg/l

C. Warmwater Fishery Use. A warmwater fishery is a stream or river reach, lake, or impoundment where water temperature and other characteristics are suitable for support and propagation of warmwater fish such as large-mouth black bass, small-mouth black bass, crappie, white bass, bluegill, flathead catfish, channel catfish, white sucker, flathead chub or fathead minnow

Standards specific to the use are as follows:

1. **Dissolved oxygen** minimum: 5 mg/l
2. Temperature maximum: 32.2° C (90° F)
3. **pH** range: 6.0-9.0
4. **Total ammonia** standards shall not exceed at any time the Environmental Protection Agency's national recommended Criterion Maximum Concentration or, exceed more than once in any three-year period, the Criterion Continuous Concentration as contained in Appendix A.
5. **Total residual chlorine** maximum: 0.003 mg/l

D. Primary Contact Ceremonial Use. Primary contact ceremonial use means the use of a stream or river reach, lake, or impoundment for religious or traditional purposes by members of Ohkay Owingeh; such use involves immersion, and intentional or incidental ingestion of water, and it requires protection of sensitive and valuable aquatic life and riparian habitat.

Standards specific to the use are as follows:

1. **Fecal coliform geometric mean maximum:** 100 colonies/100 ml (geometric mean calculation based on a minimum of five samples taken over a maximum of 30 days) single sample maximum: 200 colonies/100 ml
2. **Turbidity** ³ shall not exceed 25 NTU's.
3. The open water shall be free from algae in concentrations causing nuisance condition or causing gastrointestinal or skin disorders.
4. Concentrations of the following substances shall not exceed the following Maximum Contaminant Levels (MCL's):

<u>Substance</u>	<u>MCL</u>
Methoxychlor	0.04 mg/l
2,4-Dichlorophenoxy- acetic acid	0.07 mg/l
2- (2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0.05 mg/l
Total Trihalomethanes	0.08 mg/l
Trichloroethylene	0.005 mg/l
Carbon tetrachloride	0.005 mg/l
1, 2-dichloroethane	0.005 mg/l
vinyl chloride	0.002 mg/l
Benzene	0.005 mg/l
1, 1, 1-trichloroethane	0.20 mg/l
1, 4-dichlorobenzene	0.075 mg/l
Barium	2 mg/l

Fluoride	4.0 mg/l
Nitrate	10.0 mg/l
Selenium	0.05 mg/l

E. Primary Contact Recreational Use. Primary contact recreational use means the recreational use of a stream or river reach, lake, or impoundment involving prolonged contact and the risk of ingesting water in quantities sufficient to pose a health hazard; examples are swimming and water skiing.

Standards specific to the use are:

1. **Fecal coliform**³
 - a. April I–September 30:
 - (1) geometric mean maximum: 100 colonies/100 ml (geometric mean calculation based on a minimum of five samples taken over a maximum of 30 days)
 - (2) single sample maximum: 200 colonies/100 ml
 - b. October I–March 31: Fecal coliform standards for Secondary Contact Recreational Use apply.
2. **pH range:** 6.6-9.0
3. The open water shall be free from **algae** in concentrations causing a nuisance condition or causing gastrointestinal or skin disorders.

F. Secondary Contact Recreational Use. Secondary contact recreational use means the recreational use of a stream or river reach, lake, or impoundment in which contact with the water may, but need not, occur and in which the probability of ingesting water is minimal; examples are fishing and boating.

Standards specific to the use are:

1. **Fecal coliform:**³
geometric mean maximum: 200 colonies/100 ml (geometric mean calculation based on a minimum of five samples taken over a maximum of 30 days) single sample maximum: 400 colonies/100 ml
2. The open water shall be free from algae in concentrations causing a nuisance condition or causing gastrointestinal or skin disorders.

³Fecal coliform and turbidity both can vary suddenly and unpredictably. Accordingly, fecal coliform and turbidity effluent limits that would be allocated to dischargers in order for the standards set forth herein to be met shall apply regardless of instantaneous natural background levels. As an alternative to fecal coliform, the following standards for *E. coli* apply at a geometric mean maximum of 47 colonies/100ml and a single sample maximum of 88 colonies/100 ml, in accordance with an illness rate of 4 per 1,000 exposures.

- G. Agricultural Water Supply Use.** Agricultural water supply use means the use of water for irrigation and livestock watering.

Standards specific to the use are:

1. Fecal coliform: geometric mean maximum: 1000 colonies/100 ml (geometric mean calculation based on a minimum of five samples taken over a maximum of 30 days) single sample maximum: 2000 colonies/ 100 ml
2. Concentration of the following substances shall not exceed the following criteria: All substances are of the dissolved form

<u>Substance</u>	<u>Livestock</u>	<u>Irrigation</u>
Aluminum	5.0 mg/l	5.0 mg/l
Boron	5.0 mg/l	0.75 mg/l
Cobalt	1.0 mg/l	0.05 mg/l
Fluoride	2.0 mg/l	1.0 mg/l
Lithium	--	2.5 mg/l
Molybdenum	--	0.01 mg/l
Vanadium	0.1 mg/l	0.1 mg/l

- H. Fish Culture Use.** Fish culture use means the use of a stream or river reach, lake, or impoundment for production of coldwater or warm water fish in a hatchery or rearing station.

There are no standards specific to the use. The "General Standards" (Section III, above) apply.

- I. Industrial Water Supply Use.** Industrial water supply use means use with reference to the production of goods or services for profit.

There are no standards specific to the use. The "General Standards" (Section III, above) apply.

Section V. Uses and Standards for Designated Water Bodies

A. The uses and standards are as follows for the segment of the Rio Grande that passes through the Ohkay Owingeh Reservation, from a northernmost point located in Township 22 North, Range 8 East, Section 35, Southwest Quarter, approximately 1/2 mile west of the Village of Alcalde and approximately 2-1/2 miles upstream from the State Road 77 bridge across the Rio Grande, to a southernmost point located in Township 21 North, Range 8 East, Section 27, Southwest Quarter, approximately 1-3/4 miles downstream from the confluence of the Rio Grande and the Rio Chama, including all tributaries and branches thereof:

1. Uses:

- a. Coldwater fishery use
- b. Warm water fishery use
- c. Primary contact ceremonial use
- d. Primary contact recreational use
- e. Secondary contact recreational use
- f. Agricultural water supply use
- g. Industrial water supply use

2. Standards:

- a. Dissolved oxygen minimum: 6 mg/l
- b. Fecal coliform⁴
geometric mean maximum: 100 colonies/100 ml (geometric mean calculation based on a minimum of five samples taken over a maximum of 30 days) Single sample maximum: 200 colonies/100 ml
- c. Temperature maximum: 20° C (68° F)
- d. pH range: 6.5 - 8.5
- e. Total ammonia standards shall be calculated as a function of pH and temperature, in accordance with Appendix A
- f. Total residual chlorine maximum: 0.003 mg/l
- g. Maximum Contaminant Levels (MCL's) not to exceed levels set forth in Section IV(D), above
- h. **Turbidity** not to exceed 25 NTU's

⁴Fecal coliform and turbidity both can vary suddenly and unpredictably. Accordingly, fecal coliform and turbidity effluent limits that would be allocated to dischargers in order for the standards set forth herein to be met shall apply regardless of instantaneous natural background levels. As an alternative to fecal coliform, the following standards for E. coli apply to the primary contact uses: geometric mean maximum of 47 colonies/100 ml and a single sample maximum of 88 colonies/100 ml, in accordance with an illness rate of 4 per 1,000 exposures.

B. The uses and standards are as follows for the segment of the Rio Chama that passes through the Ohkay Owingeh Reservation, including all tributaries and branches thereof:

1. Uses:

- a. Coldwater fishery use
- b. Warm water fishery use
- c. Primary contact ceremonial use
- d. Primary contact recreational use
- e. Secondary contact recreational use
- f. Agricultural water supply use
- g. Industrial water supply use

2. Standards:

- a. Dissolved oxygen minimum: 6 mg/l
- b. Fecal coliform⁵ geometric mean maximum: 100 colonies/100 ml geometric mean calculation based on a minimum of five samples taken over a maximum of 30 days) Single sample maximum: 200 colonies/100 ml
- c. Temperature maximum: 20° C (68° F)
- d. pH range: 6.5 - 8.5
- e. Total ammonia standards shall be calculated as a function of pH and temperature, in accordance with Appendix A
- f. Total residual chlorine maximum: 0.003 mg/l
- g. Maximum Contaminant Levels (MCL's) not to exceed levels set forth in Section IV(D), above
- h. Turbidity not to exceed 25 NTU's

C. The uses and standards are as follows for the Ohkay Owingeh Tribal Lakes:

1. Uses:

- a. Marginal coldwater fishery use
- b. Warm water fishery use
- c. Primary contact recreational use
- d. Secondary contact recreational use
- e. Agricultural water supply use
- f. Industrial water supply use

⁵ Fecal coliform and turbidity both can vary suddenly and unpredictably. Accordingly, fecal coliform and turbidity effluent limits that would be allocated to dischargers in order for the standards set forth herein to be met shall apply regardless of instantaneous natural background levels. As an alternative to fecal coliform, the following standards for E. coli apply to the primary contact uses: geometric mean maximum of 47 colonies/100 ml and a single sample maximum of 88 colonies/100 ml., in accordance with an illness rate of 4 per 1,000 exposures.

2. Standards:

- a. Dissolved oxygen minimum: 6 mg/l
- b. Fecal coliform⁶ geometric mean maximum: 100 colonies/100 ml (geometric mean calculation based on a minimum of five samples taken over a maximum of 30 days) Single sample maximum: 200 colonies/100 ml
- c. Temperature maximum: 20 ° C (68° F).
- d. pH range: 6.5 - 8.5
- e. Total ammonia standards shall be calculated as a function of pH and temperature, in accordance with Appendix A
- f. Total residual chlorine maximum: 0.003 mg/l
- g. Turbidity not to exceed 25 NTU's

D. The uses and standards are as follows for the bodies of water identified as the Acequia Madre (Ohkay Owingeh Main Ditch), located in the center of the Reservation in Sections 2, 10, 11, 14, 15, 22, 26, and 27; the San Rafeal de Guique (El Guique) Ditch, located on the north and west side of the Reservation Sections 3, 10, and 15; the Chamita Community (Chamita) Ditch, located on the west side of the Reservation in Sections 4, 5, 6, 9, 10, and 15; the Upper Alcalde-Ohkay Owingeh (Alcalde) Ditch, located on the north side of the Reservation in Sections 2, 11, and 15; the El Llano Ditch, located on the south and east side of the Reservation in Sections 25 and 26; the El Llano cattle watering tanks, located on the east side of the Reservation in Section 25; the Pueblito ponds, located west of the Rio Grande in Sections 10 and 15; the Yungue Spring, located west of the Rio Grande in Section 15; the Santa Cruz Ditch, located on the east side of the Reservation within Section 26; the Salazar Ditch, located west of the Rio Chama, running north to south from Section 8 to Section 27; the Hernandez Ditch, located west of the Rio Chama, running north to south from Section 8 to Section 22; the Vigils Ditch, located west of the Rio Grande, running north to south from Section 22 to Section 27; the Chinguague stream, located east of the Rio Grande, running east to west, in Section 7; all within Township 21 North, Range 8 East;

1. Uses.

- a. Primary contact recreational use
- b. Secondary contact recreational use
- c. Agricultural water supply use
- d. Industrial water supply use

⁶ Fecal coliform and turbidity both can vary suddenly and unpredictably. Accordingly, fecal coliform and turbidity effluent limits that would be allocated to dischargers in order for the standards set forth herein to be met shall apply regardless of instantaneous natural background levels. As an alternative to fecal coliform, the following standards for E. coli apply at a geometric mean maximum of 47 colonies/100 ml and a single sample maximum of 88 colonies/100 ml., in accordance with an illness rate of 4 per 1,000 exposures.

2.

Standards:

- a. Dissolved oxygen minimum: 6 mg/l
- b. Fecal coliform⁶ geometric mean maximum: 100 colonies/100 ml (geometric mean calculation based on a minimum of five samples taken over a maximum of 30 days)
Single sample maximum: 200 colonies/100 ml
- c. Temperature maximum: 20° C (68° F)
- d. pH range: 6.5 - 8.5
- e. Total ammonia standards shall be calculated as a function of pH and temperature, in accordance with Appendix A
- f. Total residual chlorine maximum: 0.003 mg/l
- g. Turbidity not to exceed 25 NTU's
- h. Maximum Contaminant Levels (MCL's) not to exceed levels set forth in Section IV (D), above

⁷Fecal coliform and turbidity both can vary suddenly and unpredictably. Accordingly, fecal coliform and turbidity effluent limits that would be allocated to dischargers in order for the standards set forth herein to be met shall apply regardless of instantaneous natural background levels. As an alternative to fecal coliform, the following standards for E. coli apply to the primary contact uses: geometric mean maximum of 47 colonies/100 ml and a single sample maximum of 88 colonies/100 ml in accordance with an illness rate of 4 per 1,000 exposures.

SECTION VI. Sampling and Analyses

- A. Sample collection, preservation, and analysis used to determine water quality and to maintain the standards set forth in the Water Quality Standards shall be performed in accordance with procedures prescribed by the latest EPA authoritative analytical reference, including but not limited to the latest editions of any of the following authorities: (1) American Public Health Association, Standard Methods for the Examination of Water and Wastewater; (2) "Methods for Chemical Analysis of Water and Wastes"; or (3) "EPA Guidelines Establishing Test Procedures for the Analysis of Pollutants." (40 C.F.R. Part 136)
- B. Bacteriological Surveys: The monthly geometric mean is used in assessing attainment of standards when a minimum of five samples is collected in a 30-day period. When less than 5 samples are collected in a 30-day period, no single sample shall exceed the applicable upper limit for bacterial density set forth in Section IV.
- C. Sampling Procedures:
1. Streams: Stream monitoring stations below waste discharge shall be located a sufficient distance downstream to ensure adequate vertical and lateral mixing.
 2. Reservoirs and Tribal Lakes: Sampling stations in reservoirs shall be located at least 250 feet from a waste discharge, and, otherwise, where the attainment of a water quality standard is to be assessed. Water quality measurements shall be taken at intervals in the water column at a sampling station. For toxic substances and nutrients, the entire water column shall be monitored. For dissolved oxygen in stratified lakes, measurements shall be made in the epilimnion. In non-stratified lakes measurements will be made at intervals throughout the entire water column.

SECTION VII. Definitions⁷

"Acute Toxicity": Toxicity which exerts short term lethal impacts on representative organisms with a duration of exposure generally less than or equal to 48 hours; Acute toxicity shall be determined in accordance with procedures specified in EPA 821-R-02-012 (October 2002). "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms." Other methods may be used as appropriate to determine acute effects other than lethality such as, but not limited to behavioral changes or immobilization.

"Agricultural water supply use": The use of water for irrigation and livestock

"Algae": Simple plants without roots, stems, or leaves which contain chlorophyll and are capable of photosynthesis;

"Antidegradation": The policy set forth in the Ohkay Owingeh Surface Water Quality Standards whereby existing uses and the level of water quality necessary to maintain those uses is maintained and protected (See 40 C.F.R. Section 131.12 (1987));

"Aquatic biota": Animal and plant life in the water;

"Attainable use": A use of a surface water body which has the level of water quality and other characteristics that are needed to support the use, or which would have the level of water quality and other characteristics needed to support the use upon implementation of and compliance with the pertinent narrative and numeric standards in the Ohkay Owingeh Surface Water Quality Standards; Uses are deemed attainable if they can be achieved by the imposition of effluent limits required under the Federal Clean Water Act sections 301(b) and 306 and implementation of effectual best management practices for nonpoint source control;

"Best management practices": Practices undertaken to control, restrict, and diminish non-point sources of pollution, that are consistent with the purposes of the Ohkay Owingeh Surface Water Quality Standards and with the narrative and numeric standards contained therein; measures, sometimes structural, that are determined to be the most effective practical means of preventing or reducing pollution of water bodies from non-point sources;

"Carcinogenic": Cancer producing;

⁸Words and terms defined in this Section are designated in bold wherever used in the text of "Ohkay Owingeh Water Quality Standards."

"Chronic toxicity": Toxicity which exerts sub-lethal negative effects such as impairment of growth or reproduction, or which becomes lethal after long term exposure, generally measured in a 7 day test on representative sensitive organisms; Chronic toxicity shall be determined in accordance with procedures specified in EPA 821-R02-013 (October 2002) "Short term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms." Other methods may be used as appropriate.

"Coldwater fishery": A stream reach, lake, or impoundment where water temperature and other characteristics are suitable for support and propagation of coldwater fish such as brown trout, cutthroat trout, brook trout, rainbow trout; longnose dace, Rio Grande chub and Rio Grande Sucker

"Color": True color as well as apparent color. True color is the color of the water from which turbidity has been removed. Apparent color includes not only the color due to substances in solution (true color), but also that color due to suspended matter;

"Criteria": Elements of surface water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. When criteria are met; water quality will generally protect the designated use.

"Cumulative": Increasing by successive additions;

"Designated uses": Those uses set forth in the surface water quality standards herein; which are to be protected.

"Dissolved oxygen (DO)": The amount of oxygen dissolved in water or the amount of oxygen available for biochemical activity in water, commonly expressed as a concentration in milligrams per liter.

"Effluent": Discharge into surface waters from other than natural sources;

"Ephemeral stream": A stream or reach that flows briefly only in direct response to precipitation or snowmelt in the immediate locality, the channel bed of which is always above the water table in the surrounding area;

"Epilimnion": The layer of water that overlies the thermocline of a lake and that is subject to the action of wind;

"Escherichia Coli (E.Coli)": A bacteria which normally inhabits the human digestive system although some forms are also found in other mammals. Several forms of this bacteria that have been found to cause diarrheal diseases in humans are found in waters used for recreation and are known to have caused health problems when ingested during recreational activities.

"Eutrophication": The maturation of a standing body of water, involving increasing concentration of dissolved nutrients and seasonal oxygen deficiency.

"Existing uses": Those uses actually attained in a surface water body on or after November 28, 1975, whether or not they are referred to in the Ohkay Owingeh Surface Water Quality Standards;

"FDA Action Limits": Levels promulgated by the U.S. Food and Drug Administration concerning concentrations of substances in food.

"Fecal coliform bacteria": Gram negative, non spore-forming rod-shaped bacteria which are present in the gut or the feces of warm-blooded animals. Fecal coliform bacteria generally includes organisms which are capable of producing gas from lactose broth in a suitable culture medium within 24 hours at 44.5+/-0.2 C.

"Fish culture": The production of fish in a hatchery or rearing station;

"Fishery": A balanced, diverse community of fishes controlled by the water quality, quantity, and habitat of a water-body;

"Geometric Mean": Antilog of the mean of the logs of a set of numbers;

"Indigenous": Produced, growing, or living naturally in a particular region or environment

"Industrial water supply use": The use of water with reference to the production of goods or services for profit;

"Intermittent stream": A stream or reach of a stream that flows only at certain times of the year, when receiving flow from springs, melting snow, or localized precipitation;

"Marginal coldwater fishery": A stream reach, lake, or impoundment where water temperature and other characteristics are suitable for support of coldwater fish (such as brown trout, cutthroat trout, brook trout, rainbow trout, longnose dace, Rio Grande chub or Rio Grande Sucker), but where temperature and other characteristics may not always be suitable for propagation of coldwater fish;

"Milligrams per Liter (mg/l)": The concentration at which one milligram is contained in a volume of one liter; one milligram per liter is equivalent to one part per million (ppm) at unit density;

"Mixing Zone": A three-dimensional zone in which discharged effluent mixes with the receiving water and within which there is a gradation of water quality;

"Narrative standard": A standard or criterion expressed in words rather than numerically;

"Natural background": Characteristics that are not man-induced that are related to water quality; the levels of pollutants present in ambient water that are from natural, as opposed to man-induced sources;

"Nonpoint source": A source of pollution that is not a discernible, confined, and discrete conveyance; a diffuse source which flows across natural or manmade surfaces, such as run-off from agricultural, construction, mining, or silvicultural activities, or from urban areas;

"NTU": Nephelometric Turbidity Units; a measure of turbidity in water;

"Nuisance condition": A condition involving uncontrolled growth of aquatic plants, usually caused by excessive nutrients in the water.

"Nutrient": A chemical element or inorganic compound taken in by green plants and used in organic synthesis;

"Organoleptic effects": contaminants whose presence cause adverse taste or odors in water or fish.

"Perennial stream": A stream or reach of a stream that flows continuously throughout the year, the upper surface of which is generally lower than the water table of the region adjoining the stream;

"Persistent": Resistant to degradation or change;

"pH": The negative logarithm of the effective hydrogen-ion concentration in gram equivalents per liter; a measure of the acidity or alkalinity of a solution, increasing with increasing alkalinity and decreasing with increasing acidity;

"Picocurie (pCi)": That quantity of radioactive material producing 2.22 nuclear transformations per minute;

"Point source": Any discernible, confined, and discrete conveyance from which pollutants are or may be discharged into a water body; does not include return flows from irrigated agriculture;

"Primary contact ceremonial use": The use of a stream, reach, lake, or impoundment for religious or traditional purposes by members of Ohkay Owingeh; such use involves immersion, and intentional or incidental ingestion of water, and it requires protection of sensitive and valuable aquatic life and riparian habitat;

"Primary contact recreational use": Recreational use of a stream, reach, lake, or impoundment involving prolonged contact and the risk of ingesting water in quantities sufficient to pose a health hazard; examples are swimming and water skiing;

"Secondary contact recreational use": Recreational use of a stream, reach, lake, or impoundment in which contact with the water may, but need not, occur and in which the probability of ingesting water is minimal; examples are fishing and boating;

"Segment": A surface water quality standards segment, the surface waters of which have common hydrologic characteristics or flow regulation regimes, possess common natural physical, chemical, and biological characteristics, and exhibit common reactions to external stresses, such as the discharge of pollutants;

"Thermal Stratification": Horizontal layers of different densities produced in a lake caused by temperature;

"Toxicity": State or degree of being toxic or poisonous; lethal or sub-lethal adverse effects on representative sensitive organisms, due to exposure to toxic materials;

"Turbidity": A measure of the amount of suspended material, particles, or sediment, which has the potential for adverse impacts on aquatic biota;

"Use-attainability analysis": A structured scientific assessment of the factors affecting attainment of a use for a body of water, which assessment may include physical, chemical, biological, and economic factors, such as those referred to in 40 C.F.R. Section 131.10(g), and guidance for which may be found in U.S. Environmental Protection Agency, Technical Support Manual: Water-body Surveys and Assessments for Conducting Use-Attainability Analyses (Volume 1–Streams; Volume 2–Estuarine Systems; Volume 3–Lake Systems);

"Warm water fishery": A stream reach, lake, or impoundment where water temperature and other characteristics are suitable for support and propagation of warm water fish such as large-mouth black bass, small-mouth black bass, crappie, white bass, bluegill, flathead catfish, channel catfish, white sucker, flathead chub or fathead minnow

"Water Contaminant": Any substance which alters the physical, chemical, or biological qualities of water;

"Zone of passage": The portion of the receiving water outside the mixing zone (where water quality is, throughout, the same as that of the receiving water).

“Waters of the United States”: Means any or all of the following

A} All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

B} All interstate waters, including interstate “Wetlands”

C} All other waters such as intrastate lakes, rivers, streams including intermittent streams, mudflats, sand-flats, “wetlands”, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

- 1.) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
- 2.) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
- 3.) Which are used or could be used for industrial purposes by industries in interstate commerce;

D} All impoundments of waters otherwise defined as waters of the United States under this definition;

E} Tributaries of waters identified in paragraph (a) through (d) of this definition;

F} The territorial sea; and

G} “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of the definition.

APPENDIX A

Chronic Criterion for Fish Early Life Stages Present

pH	Temperature (degrees Celsius)																	
	0	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6.5	6.67	6.67	6.46	6.06	5.68	5.33	4.99	4.68	4.39	4.12	3.86	3.62	3.39	3.18	2.98	2.80	2.62	2.46
6.6	6.57	6.57	6.36	5.97	5.59	5.25	4.92	4.61	4.32	4.05	3.80	3.56	3.34	3.13	2.94	2.75	2.58	2.42
6.7	6.44	6.44	6.25	5.86	5.49	5.15	4.83	4.52	4.24	3.98	3.73	3.50	3.28	3.07	2.88	2.70	2.53	2.37
6.8	6.29	6.29	6.10	5.72	5.36	5.03	4.72	4.42	4.14	3.89	3.64	3.42	3.20	3.00	2.82	2.64	2.47	2.32
6.9	6.12	6.12	5.93	5.56	5.21	4.89	4.58	4.30	4.03	3.78	3.54	3.32	3.11	2.92	2.74	2.57	2.41	2.25
7.0	5.91	5.91	5.73	5.37	5.04	4.72	4.43	4.15	3.89	3.65	3.42	3.21	3.01	2.82	2.64	2.48	2.32	2.18
7.1	5.67	5.67	5.49	5.15	4.83	4.53	4.25	3.98	3.73	3.50	3.28	3.08	2.88	2.70	2.53	2.38	2.23	2.09
7.2	5.39	5.39	5.22	4.90	4.59	4.31	4.04	3.78	3.55	3.33	3.12	2.92	2.74	2.57	2.41	2.26	2.12	1.99
7.3	5.08	5.08	4.92	4.61	4.33	4.06	3.80	3.57	3.34	3.13	2.94	2.76	2.58	2.42	2.27	2.13	2.00	1.87
7.4	4.73	4.73	4.59	4.30	4.03	3.78	3.55	3.32	3.12	2.92	2.74	2.57	2.41	2.26	2.12	1.98	1.86	1.74
7.5	4.36	4.36	4.23	3.97	3.72	3.49	3.27	3.06	2.87	2.69	2.53	2.37	2.22	2.08	1.95	1.83	1.72	1.61
7.6	3.98	3.98	3.85	3.61	3.39	3.18	2.98	2.79	2.62	2.45	2.30	2.16	2.02	1.90	1.78	1.67	1.56	1.47
7.7	3.58	3.58	3.47	3.25	3.05	2.86	2.68	2.51	2.36	2.21	2.07	1.94	1.82	1.71	1.60	1.50	1.41	1.32
7.8	3.18	3.18	3.09	2.89	2.71	2.54	2.38	2.23	2.10	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
7.9	2.80	2.80	2.71	2.54	2.38	2.24	2.10	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17	1.10	1.03
8.0	2.43	2.43	2.36	2.21	2.07	1.94	1.82	1.71	1.60	1.50	1.41	1.32	1.24	1.16	1.09	1.02	0.96	0.897
8.1	2.10	2.10	2.03	1.91	1.79	1.68	1.57	1.47	1.38	1.29	1.21	1.14	1.07	1.00	0.94	0.879	0.824	0.773
8.2	1.79	1.79	1.74	1.63	1.53	1.43	1.34	1.26	1.18	1.11	1.04	0.973	0.912	0.855	0.802	0.752	0.705	0.661
8.3	1.52	1.52	1.48	1.39	1.30	1.22	1.14	1.07	1.00	0.941	0.882	0.827	0.775	0.727	0.682	0.639	0.599	0.562
8.4	1.29	1.29	1.25	1.17	1.10	1.03	0.97	0.906	0.849	0.796	0.747	0.700	0.656	0.615	0.577	0.541	0.507	0.475
8.5	1.09	1.09	1.06	0.990	0.928	0.870	0.816	0.765	0.717	0.672	0.630	0.591	0.554	0.520	0.487	0.457	0.428	0.401
8.6	0.920	0.920	0.892	0.836	0.784	0.735	0.689	0.646	0.606	0.568	0.532	0.499	0.468	0.439	0.411	0.386	0.362	0.339
8.7	0.778	0.778	0.754	0.707	0.663	0.622	0.583	0.547	0.512	0.480	0.450	0.422	0.396	0.371	0.348	0.326	0.306	0.287
8.8	0.661	0.661	0.641	0.601	0.563	0.528	0.495	0.464	0.435	0.408	0.383	0.359	0.336	0.315	0.296	0.277	0.260	0.244
8.9	0.565	0.565	0.548	0.513	0.481	0.451	0.423	0.397	0.372	0.349	0.327	0.306	0.287	0.269	0.253	0.237	0.222	0.208
9.0	0.486	0.486	0.471	0.442	0.414	0.389	0.364	0.342	0.320	0.300	0.281	0.264	0.247	0.232	0.217	0.204	0.191	0.179

Chronic Criterion (CCC) for Fish Early Life Stages Absent, mg N/L

pH	Temperature (degrees Celsius)									
	0-7	8	9	10	11	12	13	14	15*	16*
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
8.8	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
8.9	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
9.0	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

* At 15 C and above, the criterion for fish ELS absent is the same as the criterion for fish ELS present.

Acute Criterion (CMC), mg N/L		
pH	Salmonids	Salmonids
	Present	Absent
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

APPENDIX

B

ORGANOLEPTIC EFFECT CRITERIA

	Pollutant	CAS Number	Criteria (ug/L)
1	Acenaphthene	83329	20
2	Monochlorobenzene	108907	20
3	3-Chlorophenol	—	0.1
4	4-Chlorophenol	106489	0.1
5	2,3-Dichlorophenol	—	0.04
6	2,5-Dichlorophenol	—	0.5
7	2,6-Dichlorophenol	—	0.2
8	3,4-Dichlorophenol	—	0.3
9	2,4,5-Trichlorophenol	95954	1
10	2,4,6-Trichlorophenol	88062	2
11	2,3,4,6-Tetrachlorophenol	—	1
12	2-Methyl-4-Chlorophenol	—	1800
13	3-Methyl-4-Chlorophenol	59507	3000
14	3-Methyl-6-Chlorophenol	—	20
15	2-Chlorophenol	95578	0.1
16	Copper	7440508	1000
17	2,4-Dichlorophenol	120832	0.3
18	2,4-Dimethylphenol	105679	400
19	Hexachlorocyclopentadiene	77474	1
20	Nitrobenzene	98953	30
21	Pentachlorophenol	87865	30
22	Phenol	108952	300
23	Zinc	7440666	5000

